

## CLAIMS

We claim:

1                   1.       A method of constructing a model for estimating electrical  
2 characteristics for an extraction sub problem, said method comprising:  
3       identifying a set of physical measurements that define said extraction sub  
4       problem;  
5       selecting a set of training cases for said specific extraction sub problem, each of  
6       said training cases including an associated set of said physical measurements;  
7       solving said specific extraction sub problem for each of said training cases using  
8       said associated set of physical measurements as an input to an accurate physics  
9       based model to generate an associated output; and  
10       training a machine-learning model with Bayesian inference using said associated  
11       set of physical measurements and associated outputs as training data.

1                   2.       The method as claimed in claim 1 wherein said electrical  
2 characteristic comprises capacitance.

1                   3.       The method as claimed in claim 1 wherein said electrical  
2 characteristic comprises resistance.

1                   4.     The method as claimed in claim 1 wherein said extraction sub  
2     problem comprises a section of interconnect wire and nearby interconnect wiring within a  
3     define halo.

1                   5.     The method as claimed in claim 1 wherein said extraction sub  
2     problem comprises a section of interconnect wiring.

1                   6.     The method as claimed in claim 1 wherein one of said set of  
2     physical parameters comprises a spacing between a pair of interconnect lines.

1                   7.     The method as claimed in claim 1 wherein one of said set of  
2     physical parameters comprises a wire width.

1                   8.     The method as claimed in claim 1 wherein one of said set of  
2     physical parameters comprises a wire length.

1                   9.     The method as claimed in claim 1 wherein selecting a set of  
2     training cases comprises randomly generating input parameters with a gamma probability  
3     distribution.

1                   10.     The method as claimed in claim 1 wherein said electrical  
2     characteristic comprises delay.

1                   11.     The method as claimed in claim 1 wherein said machine-learning  
2     model comprises a neural network.

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